CALIFORNIA MARINE LIFE PROTECTION ACT INITIATIVE
MASTER PLAN SCIENCE ADVISORY TEAM
NOVEMBER 15, 2005 MEETING SUMMARY
National Marine Fisheries Service, Santa Cruz Lab
110 Shaffer Road
Santa Cruz, CA 95060

SAT members present: Loo Botsford, Steve Gaines, Rikk Kvitek, Steven Murray, Stephen Palumbi, Susan Schlosser, Rick Starr, Dean Wendt, Mary Yoklavich

SAT members not present: Mark Carr, Doyle Hanan, Mark Ohman, Jeff Paduan, Linwood Pendleton, Dave Schaub, Kenneth Schiff, Astrid Scholz, William Sydeman

Others present: Steve Barrager (SAT Chair), Michael DeLapa (MLPA staff), Evan Fox (MLPA staff), Heather Galindo (note taker; SAT support staff), Mary Gleason (MLPA staff), Tegan Hoffman (MLPA consultant), Carrie Kappel (note taker; SAT support staff), John Kirlin (MLPA staff), Paul Reilly (DFG staff), Paulo Serpa (DFG staff), John Ugoretz (DFG staff) and approximately 15 members of the public

Acronyms used: California Department of Fish and Game (DFG), fraction of lifetime egg production (FLEP), geographic information system (GIS), marine protected area (MPA), MLPA Blue Ribbon Task Force (BRTF), MLPA Central Coast Regional Stakeholder Group (CCRSG), MLPA Central Coast Science Sub-Team (CCSST), MLPA Master Plan Framework (MPF), MLPA Master Plan Science Advisory Team (SAT), Monitoring, Evaluation, and Adaptive Management Framework (MEAMF), state marine conservation area (SMCA), state marine park (SMP), state marine reserve (SMR)

Welcome, Review of Agenda, and Recent updates

Steve Barrager welcomed the SAT members and began by congratulating them on having their design guidelines successfully incorporated into the process. He added that the stakeholders and others are anticipating feedback from the SAT over the next few months. Now that a set of MPA proposals have been submitted for the central coast, the SAT will be asked to provide preliminary feedback and develop a plan for further evaluation. Steve then reviewed the agenda for the day's meeting.

John Kirlin followed by thanking the SAT members for their participation and emphasizing the importance of the day's meeting.

Species Likely to Benefit List

John Ugoretz outlined the changes made to the species likely to benefit document since the last SAT meeting. Language that appeared to be biased against fishing was removed. The table should not be considered to be exhaustive and the criteria in the table are not additive. The criteria involving the shift of a species size structure to smaller individuals was removed because this information is not readily available for the bulk of the species on the list. John Ugoretz asked the SAT to decide whether a short list of prioritized species should be included in addition to the longer, more encompassing list. He noted that the central coast evaluation

sub-team had held a discussion and suggested that a short list including species of algae, plants, invertebrates, fishes, seabirds, and sea lions particularly likely to benefit be developed. Abalone and Pismo Clams should not be included on this list because the presence of otters in the central coast makes a dramatic recovery response from either of these species unlikely.

Members of the SAT responded by explaining that while information on the size and age structure of many species is not widely available, it should be included where it is available. Loo Botsford agreed to provide data for at least five fish species based on the results of his fraction of lifetime egg production (FLEP) model.

Concern about the short list of species led to a further explanation by John Ugoretz. The short list is meant to emphasize species on the full list that are of particular concern and may facilitate comparisons between MPA alternatives that are not feasible with the entire species list. He reminded the SAT that alternate versions of this short list have come up at least three times in the development of the species likely to benefit document and a final decision should be made by the SAT. Further discussion by the SAT indicated that if the criteria categories are not meant to be additive, then prioritizing certain species is in contradiction with that decision. In addition, simplification of the full list will lead to a loss of critical information such as changes in size and age structure and other criteria. John Ugoretz then asked the SAT if they would prefer to remove the short list and its accompanying text from the species likely to benefit document. He also asked the SAT to make its decision while considering whether the lack of a short list would hinder the ability to efficiently analyze the MPA packages and to understand that the stakeholders would likely not be able to pare the list down on their own. The SAT agreed to remove the short list and the accompanying text.

John Ugoretz then moved the discussion on to the matrix portion of the document. He explained that for each species a “1” indicates that a criteria is met, a “0” indicates the criteria is not met, and an “ND” indicates data are not available. A column will be added for size structure with information to be added for black, blue, brown, copper, and olive rockfish. Stock-recruitment information for other species such as cowcod might also be available. The SAT considered including both this kind of quantitative data along with qualitative data, such as evidence that the size structure of a species is smaller now than it was known to be 20-30 years ago. The latter type of data is available for species such as squid and abalone.

The SAT moved on to discuss whether or not to add structure-forming species that are particularly vulnerable to fishing gear. It was agreed that gorgonian corals, hydrocorals, sponges, and sea pens should be added to the list. Sea cucumbers should also be added if there is information about the impact of fishing on this species from central California. In general, data used to include species in the list should be peer reviewed. One last correction was made to the entry for the depth of red rock crab changing it from 250m to 750m.

John Ugoretz closed the discussion by saying that the species likely to benefit document would be presented to the CCRSG and BRTF as a working list instead of as a document upon which absolute consensus had been reached.

Initial MPA Array Proposals

John Kirlin outlined the timeline for developing and evaluating the MPA packages as follows:

- November 9-10, 2005: CCRSG produced MPA packages
- November 15, 2005: SAT will begin initial review of MPA packages
- November 29-30, 2005: BRTF will begin initial review of MPA packages
- December 6-7, 2005: CCRSG will consider initial feedback from the SAT and BRTF and will make final revisions to the MPA packages
- After December, the SAT will continue to work with the BRTF, DFG, and the Fish and Game Commission in evaluating the packages

John Kirlin went on to set the goals for the initial SAT evaluation of the MPA packages by asking the SAT to look for weaknesses in the current packages and to suggest changes to strengthen them. The evaluation process should build off the longer-term work of the SAT design guidelines and reviewing the CCRSG goals and objectives. In addition, the CCRSG has come up with a list of questions including: How does an SMCA with limited take compare to an SMR? What is the difference between having a number of small protected areas and having MPAs matching the original guidelines? How much deep water habitat should be included?

Steve Barrager then gave a short presentation suggesting a way to approach evaluation of the MPA packages. The approach involved several key components:

- Identify the key questions such as: How does a single network meet the goals and objectives? How do networks compare to each other?
- Once the questions are identified, try to imagine the final evaluation product including how it will be presented.
- Evaluation will require working definitions of the several types of MPAs.

Steve Barrager then gave examples of how the evaluation analyses of packages for particular guidelines might be presented to the CCRSG or BRTF emphasizing effective means of presenting summaries of the raw data.

In general, SAT members found the presentation useful and liked the idea of thinking about how to present evaluations based on each goal in summary fashion. More specific discussion points included the following:

- The amount of area of each habitat type should be expressed as a percentage since some habitats are rarer than others. Also, habitat categories should be consistent with the MLPA and design guidelines in the MPF. The MLPA Initiative staff will provide the amount of each habitat type in each MPA.
- A working list of MPA categories should be created. In addition to the three listed in the MLPA (SMR, SMP, SMCA), there are several possible subcategories such as areas where take of groundfish, kelp, forage fish, or benthic invertebrates is prohibited. Other areas may prohibit bottom trawling or the use of other fishing gear that contacts the

bottom. It was suggested that the working list be developed based on the MPAs proposed by the stakeholders.

- Graphics should be able to express the extent of an MPA both along a coastline and across a depth range while still taking habitat into account.
- In order to evaluate the size and spacing of MPAs, distances will be calculated as long-shore span in statute miles. A series of straight lines will be used to measure distances around headlands. Depths will be calculated as feet or fathoms. The data will be provided by MLPA Initiative staff.
- Replication of a particular type of MPA within and between habitat types is required to meet the guidelines of the MLPA and the MPF.
- Fractional changes should be used to assess impact (e.g. a certain fishery has been potentially reduced by 1%). The data from the Ecotrust study on fishing will be useful here.
- In evaluating packages for goal 3, objective 1 (for the central coast study region), it will be important to consider whether MPAs are appropriately accessible based on the objectives of that MPA. Straight line distances to the nearest access point may not capture this adequately.
- Evaluating the potential of particular packages for future adaptive management and monitoring might involve the following questions: Are there adjacent MPAs of various types that can be scientifically compared? Can some of the MPAs be used as adequate reference sites for fisheries management? Do any of the MPAs contain pre-existing monitoring sites? Are there an appropriate number of replicates of each MPA type of various sizes in a number of habitats?

After the general discussion on MPA evaluation, Mary Gleason introduced the five MPA packages that had been submitted to date. She cautioned that the packages were still under revision with some errors already noted and that more packages were likely to be submitted. Staff is working with the package designers to accurately capture the shapes of MPAs in GIS format. Packages from the CCRSG are designated with numbers while those from outside groups are lettered. Each package contains a map for the north and south section of the central coast region along with tables containing information about habitat types and the allowed uses in each MPA. Mary Gleason closed by apologizing for errors in the maps provided for Package A.

John Ugoretz then presented the packages in detail to the SAT by displaying the maps on the projection screen and indicating the location, type, and name of each MPA.

After seeing the preliminary proposals, the SAT began considering how to provide appropriate initial feedback to the stakeholders in time for their December meeting. John Kirlin reminded the SAT to consider questions such as size and spacing, protection of deep water habitats, and the efficacy of various levels of protection. Important points of discussion included the following issues:

- If take is restricted, then it is assumed all bycatch would be thrown back unless otherwise specified.
- Data on the size, spacing, and amount of habitat types in each MPA are critical for even an initial cursory evaluation. Identifying stretches of unprotected coast and levels of protection afforded by various MPA types are also important.
- Size and spacing of MPAs have to be considered together according to the SAT design guidelines (e.g. smaller reserves should be closer together while larger ones can be further apart).
- Habitat data are not as readily available in nearshore areas. For most areas, it is possible to map hard versus soft bottom habitats, although there is a tendency to overestimate soft bottom habitats. The fine and coarse scale datasets will be merged for this analysis. It would be helpful to indicate the type of data used to evaluate each MPA. There are fewer habitat data available for the area south of Big Creek.
- SAT members should consult people with expertise in various geographic areas containing proposed MPAs.
- Although there is a high degree of overlap between proposals, it is important to consider what aspects make the packages both similar and different.
- Results of a gap analysis on existing MPAs might help to evaluate how the packages fill these gaps. Among aspects missing from existing MPAs are protection of habitats deeper than 100m, of rocky habitats, and of habitats from Año Nuevo to Elkhorn Slough and again from Big Creek to Atascadero.
- Modeling can be used to evaluate how the proposed MPA arrays will affect population sustainability for species with varying dispersal distances.
- There has been a lack of scientific studies comparing the effects of marine parks or conservation areas having various levels of protection with the effects of marine reserves. The conservation benefits of a park or conservation area will depend on the type and amount of bycatch associated with allowed harvest in addition to water depth, habitat, and efficacy of enforcement. The ecological roles of either harvest or bycatch species must also be considered.
- Considering the percent of coastline covered by MPAs is supplemental, and not sufficient, to evaluating the proposal packages.
- More deep water protection can be afforded by extending some SMRs with SMCAs. However, MPAs extending to the three mile limit do not necessarily include deep water.
- Replication of marine reserves among habitats and within bioregions is mandated by the MLPA.

The SAT decided to break into smaller groups to provide some specific feedback about each proposal especially considering the major issues outlined above. Initial feedback by the SAT on the draft MPA packages was as follows:

Package 1

- The SMCA at Julia Pfeiffer Burns may adequately fill the gap between the Point Lobos and Alder Creek SMRs if only salmon is taken. However, if there is a significant amount of associated by-catch, protection may not be adequate for either pelagic or demersal species.
- Allowing for some scientific take from the Ed Ricketts SMCA for the purposes of monitoring and evaluation, but not large scale scientific or educational take, would meet the objectives concerning monitoring and evaluation of MPA performance.
- Many of the proposed MPAs around the Monterey Peninsula already exist, but there is a large increase in the Point Lobos area due to the proposed SMCA.
- There is limited protection of deep water habitats in the form of SMRs.
- Most protection in the southern area of the central coast study region is only for demersal species.
- There is little intertidal protection in the southern central coast study region.
- The largest reserve is only four miles in length.

Package 2

- The four MPAs at Año Nuevo are disjointed and could be simplified by creating one SMR and one SMCA in the area in order to protect forage fish for seabirds and groundfish.
- An MPA only protecting the intertidal does not have conservation benefits for sub-tidal and pelagic communities.
- There is a lack of SMRs in deep water. Both SMRs and SMCAs in deep water should be included. This will allow for a scientific evaluation of the relative biological effects of SMRs and SMCAs that allow salmon and spot prawn fisheries.
- MPAs at Point Lobos should encompass the entire Yankee Reef to ensure conservation benefits and allow for adequate scientific monitoring.

Package 3

- There are no marine reserves south of Point Buchon.
- There is good size and spacing for most MPAs. In addition, many of them extend to the 3-mile limit of state waters and afford some deep water protection. If suitable habitat is captured, there should be adequate network effects.
- There are few MPAs between Cambria and Purisima Point with none extending into deeper waters.
- The intended function of small SMRs (less than three miles in length) is unclear.
- Estuaries at Elkhorn Slough and/or Morro Bay should be included because they serve as important nursery and adult habitats for many species.

- More consideration should be given to areas around headlands in the southern region because of their link to zones of upwelling and larval retention.
- Many of the SMCAs in this package will likely function as SMRs if by-catch is limited.

Package A

- There are a small number of large reserves with adequate spacing.
- Año Nuevo SMCA may provide adequate protection as long as there is limited by-catch from the salmon fishery.
- Sand Hill Bluff SMR has adequate size, spacing, and habitat.
- Soquel Canyon SMCA and Portuguese Ledge SMR capture good habitat and are of adequate size.
- Elkhorn Slough SMR and Morro Bay SMR give protection to both of the two estuarine areas in the Central Coast study region, areas known to serve as important nursery grounds for coastal species.
- All SMRs around the Monterey Peninsula together cover 5.5 square miles (including Point Lobos SMR).
- Monterey Shale Beds SMP and Carmel Bay SMP seem to have little conservation value because of allowed fishing levels.
- The large Big Sur SMR supports the spacing between the Monterey Peninsula and Point Sur MPAs and encompasses the depth range out to three miles.
- The Piedras Blancas SMR will likely protect a lot of rocky habitat based on topography and kelp distributions.
- Either the Point Buchon SMR or Cambria SMR should be extended with an SMCA to the 3-mile state limit to fill in the gap in deep water protection between Piedras Blancas SMR and Point Sal SMR.
- Point Arguello SMCA is of adequate size and is appropriately spaced from other MPAs.
- This package does a good job of including submarine canyon heads and thus protecting deep water habitats.
- This package also does a good job of targeting headlands and points for protection, areas likely to support high biological productivity. Because headlands and points are more exposed to coastal current regimes, they are also likely to act as good source locations for enriching adjacent unprotected areas and facilitating connectivity within the MPA network.

Package B

- The SAT noted that the one large SMR proposed for the entire study region would generate an extraordinary socioeconomic impact, and that similar ecological benefits could be achieved with a collection of smaller reserves (6-12km) spaced along the coast (50-100km), consistent with the guidelines in the MPF.

The SAT closed the discussion by creating sub-teams to focus on the following evaluation tasks:

- Analysis of proposed networks by habitats based on data available from MLPA Initiative staff – Steve Gaines (lead).
- Analysis of how proposed networks affect the sustainability of populations in terms of size, spacing, location and dispersal distances – Loo Botsford (lead), Steve Gaines.
- Detailed analysis of the ecological values of individual MPAs – Rick Starr and Mary Yoklavich (leads).
- Evaluate changes in level of protection between the existing MPAs and the proposed arrays – Paul Reilly (lead), MLPA Initiative staff.

Monitoring, Evaluation, and Adaptive Management Framework

Tegan Hoffman, consultant to the MLPA Initiative, gave a brief presentation on the plans for the Monitoring, Evaluation, and Adaptive Management Framework **(**MEAMF). During a meeting in August 2005, staff worked on an outline for a monitoring plan. The intent is for the plan to consider several scales, from the central coast to the entire state, and from single MPAs to MPA networks. At all scales, it is important to think about monitoring in terms of meeting the guidelines and objectives of the MLPA. Tegan broke the plan down into four major categories:

1. Overview of MEAMPF: Structure, organization, and management.
2. Adaptive management at the ecosystem scale: Linking goals and objectives together at various scales along with the decision making process.
3. Statewide oversight and management: Organizational structure, intellectual property rights, quality control, and related issues.
4. Regional implementation plan.

Tegan then asked the SAT for specific feedback in the following areas in time to be presented to the BRTF in January:

- Identifying key scientific questions related to adaptive management at the ecosystem or biogeographic level. These questions will be critical for the implementation of the MPA networks.
- Feedback on the indicators for the CCRSG goals and objectives, especially concerning the spatial and temporal aspects of data collection and monitoring.

SAT members responded by saying that in order to provide that kind of feedback, it's important to know if the issues are being approached from the standpoint of ecology or resource management. In addition, much more is known about the integrity and function of populations than for ecosystems. A starting point may be to think about ecosystems as a group of populations. Clearly defining what a network is and how the components of a network are connected is also important. Knowing about dispersal distances is important, but simply

looking at whether the overall number of species is increasing may not indicate that the network is functioning. It is also important to take into account the persistence of populations and changes in community trajectories over time.

The SAT decided that a sub-team would be formed to work with Tegan Hoffman in drafting an initial list of key questions and providing feedback on the monitoring and evaluation indicators. The work products would then be circulated to the SAT for further review before feedback was presented to the BRTF.

Wrap up and Public Comment

Public comment was offered by four members of the CCRSG:

- The fishermen appreciate the work the SAT is doing and encourage the group to look closely at the rationales provided with the MPA proposal packages. It would also be helpful if the SAT could somehow prioritize some of the species on the species likely to benefit List. Finally, since it is ultimately the interplay between MPAs and harvest rates that will affect populations, any scientific analyses of these interactions would be appreciated.
- It would be helpful to the stakeholders to have more quantitative answers from the SAT on issues such as the recommended amount of deep water habitat protection, the conditions under which an SMCA can provide the same benefits as an SMR, and the tradeoffs between recreational and commercial fishing. More quantitative answers would facilitate cooperation between stakeholders with conflicting interests.
- If biological information is not available or applicable to MPAs near the Monterey Peninsula, then the SAT should be able to offer socioeconomic input.

Upcoming Meetings

The next SAT meeting will be January 20, 2006 in San Jose, CA.